WHAT IS CLAIMED IS:

1. A radio frequency device for integration with conductive, dielectric materials, said device comprising:

a radio component for transmitting radio signals, receiving radio signals, or both;

an antenna connected to said radio component;

an adhesive coating substantially covering at least said antenna; and,

an insulating layer attached to said antenna by said adhesive coating, said insulating layer being configured to insulate at least said antenna from the conductive, dielectric materials, said insulating layer having a relative dielectic constant less than the relative dielectric constant of the conductive, dielectric materials.

2. A radio frequency device as set forth in claim 1, wherein said insulating layer has a relative dielectric constant about 6 or less at operating frequency.

3. A radio frequency device as set forth in claim 1, wherein said insulating layer is constructed from a silica reinforced elastomer.

4. A radio frequency device as set forth in claim 1, where said insulating layer has an after-cure thickness of at least 0.3 mm.

5. A radio frequency device as set forth in claim 1, wherein said insulating layer provides a dielectric loss of about 0.6 or less at operating frequency.

6. A radio frequency device as set forth in claim 1, wherein said insulating layer has a dielectric loss of about 0.6 or less at operating frequency, a surface resistivity of at least about 10^{12} ohms*cm, and a volume resistivity of at least about 10^{13} ohms.

7. A radio frequency device as set forth in claim 1, wherein the conductive, dielectric materials are present within a tire and said insulating layer is configured for being adhered to the tire.

8. A radio frequency device as set forth in claim 1, wherein the conductive, dielectric materials are present within a tire and said insulating layer is configured for being embedded within the tire.

9. A radio frequency device as set forth in claim 1, wherein said radio component operates at a frequency of at least 130 MHz.

10. A tire having a radio frequency device integrated therein, said radio frequency device comprising:

a radio component for transmitting radio signals, receiving radio signals, or both;

an antenna connected to said radio component;

an adhesive coating substantially covering at least said antenna; and,

an insulating layer attached to said antenna by said adhesive coating, said insulating layer being configured to insulate at least said antenna from said tire, said insulating layer having a relative dielectic constant less than the relative dielectric constant of at least a portion of said tire proximate to said antenna when used with said tire.

11. A tire as set forth in claim 10, wherein said insulating layer has a relative dielectric constant of about 6 or less at the operating frequency of said radio component.

12. A tire as set forth in claim 11, wherein said insulating layer comprises a silica reinforced elastomer.

13. A tire as set forth in claim 12, wherein said insulating layer has an after-cure thickness of at least 0.3 mm.

14. A tire as set forth in claim 13, wherein said insulating layer provides a dielectric loss of of about 0.6 or less at operating frequency.

15. A tire as set forth in claim 13, wherein said insulating layer provides a dielectric loss of of about 0.6 or less at operating frequency, a surface resistivity of at least about 10^{12} ohms*cm, and a volume resistivity of at least about 10^{13} ohms.

16. A tire as set forth in claim 13, wherein said radio component operates at a frequency of at least 130 MHz.

17. A method for assembling a radio frequency device for use with a tire, comprising the steps of:

providing a radio component for transmitting radio signals, receiving radio signals, or both;

providing an antenna connected to said radio component;

coating at least said antenna with an adhesive; and

applying an insulating layer to said antenna for attachment by said adhesive coating, said insulating layer being configured to insulate at least said antenna from the tire, said insulating layer having a relative dielectic constant less than the relative dielectric constant of the tire.

18. A method for assembling a radio frequency device for use with a tire as in claim 17, further comprising the step of integrating said insulating layer, antenna, and radio component with the tire.

19. A method for assembling a radio frequency device for use with a tire as in claim 17, further comprising the step of embedding said insulating layer, antenna, and radio component with the tire.

20. A method for assembling a radio frequency device for use with a tire as in claim 17, further comprising the step of attaching said insulating layer to the tire.

21. A method for assembling a radio frequency device for use with a tire as in claim 17, wherein the tire is constructed from elastomeric materials, and further comprising the step of tuning said antenna for the resonant frequency of said elastomeric materials.

22. A method for assembling a radio frequency device for use with a tire as in claim 17, wherein the tire is constructed from elastomeric materials, and further comprising the step of curing said insulating layer with said elastomeric materials.

23. A method for assembling a radio frequency device for use with a tire as in claim 22, wherein said insulating layer has a thickness of at least 0.3 mm after said curing step.

24. A method for assembling a radio frequency device for use with a tire as in claim 17, wherein said insulating layer has a relative dielectric constant of about 6 or less at operating frequency.

25. A method for assembling a radio frequency device for use with a tire as in claim 24, wherein said insulating later is comprised of a silica reinforced elastomer.